REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Interview/Claim Amendments

The Examiner is thanked for the courtesy extended during an interview at her office on March 9, 2004.

During the interview, the undersigned explained that the prior art applied in the December 15, 2004, final Office Action, including U.S. Patent Nos. 5,246,319 (Prince) and 4,949,270 (Shima), fail to disclose or suggest an intaglio printing plate production method in which the tool track to be followed by the engraving tool with a desired contour is based on a desired contour and a predetermined desired depth, permitting the depth as well as the contour to be freely varied, thereby permitting grey levels (or colors) established by the plate to be easily selected for any point in the contour, as opposed to (i) calculating a depth based on the desired contour (and tool shape as in Prince), or (ii) pocket machining to a fixed depth as in Shima.

In reply, the Examiner replied that any "tool track" was inherently determined by the cutting depth, however determined, as well as the contour. According to the Examiner, since the prior art teaches cutting of a predetermined two-dimensional contour to a predetermined depth, and since such cutting *could* be used in intaglio printing, the invention as claimed "reads on" the prior art. According to the Examiner, the claim language did not include any recitations that would distinguish a numerical control that determined by the cutting path based on a contour and calculated depth of the type taught by Prince, or simply a contour as in the Shima patent. No agreement was reached during the interview.

As a result of the Examiner's comments during the interview, the Applicant now proposes to amend the claims to further emphasize that the invention involves transferring

a two-dimensional line original to an intaglio plate *while enabling the depth profile of the contours in the plate to be freely chosen*, by determining the tool track based on the desired contour and a desired depth profile. This is important because, in intaglio printing, but not the types of printing disclosed in references such as the Prince patent, the depth profile determines the gray level or color intensity of the printed image.

Support for the amendment of the claims to recite a "two-dimensional line original" and a "depth profile" is found, for example, in the second complete paragraph on page 2 of the application as originally filed.

In addition, it is respectfully noted that claim 44 has been amended in the manner suggested in item 2 on page 2 of the final Office Action, and claim 42 has been amended to delete the word "additional" in order to clarify that the information refers back to the additional information recited in claim 28.

2. Rejection of Claims 1-2, 4, 6, 14, 16-17, and 37 Under 35 U.S.C. §102(b) in view of U.S. Patent No. 5,246,319 (Prince), or Under 35 U.S.C. §103(a) in view of the Technical Manual from Lang GmbH (the Lang article) in view of the Prince Patent; and Rejection of Claim 36 Under 35 USC §103(a) in view of the Prince patent

This rejection is respectfully traversed on the grounds that the Prince patent and Lang publication fail to disclose a method for producing an *intaglio* printing plate, of the type in which the depth profile determines the amount of ink used in printing and therefore the grey level or color of the product to be printed by the plate, much less an intaglio printing plate in which the desired contour is an edge of a limited partial area defined by a two-dimensional line original, and in which the desired contour is further associated with a depth profile within the desired contour, as recited in amended claim 1, the track data for the engraving tool being based on both the desired contour and the predetermined depth profile. **The Prince patent is solely concerned with the problem of achieving a desired contour for a given tool shape, and has no reason to predetermine a depth profile or associate the predetermined depth profile with the desired contour.**

In the method disclosed in the Prince patent, the operator enters a desired two-dimensional contour or two-dimensional tool track and the appropriate depth is determined based on the shape of the tool (col. 1, lines 45-48). The tool depth is determined at each point along the cutter path such that edges of the tool remain tangent to two side of the carving at all times, as explained in col. 4, lines 19-22, and thus the tool depth is a **consequence** of the two-dimensional boundaries and the shape of the tool rather than the two-dimensional boundaries and a desired depth profile. The Prince patent therefore fails to disclose or suggest the **steps of "associating" a depth profile within the desired contour**, and of determining the tool track is not based on the desired contour ***and the predetermined desired depth profile***. Instead, the tool track is determined solely by the desired depth profile and the shape of the tool. This deficiency is not remedied by the Lang publication, which fails to disclose any sort of numerical control of an engraving tool, but rather discloses a milling machine.

It is true that Prince varies the penetration depth, in order to ensure that the tool edge at the surface of the workpiece remains always in contact with both sides of the engraving (col. 3, lines 22 to 25 of Prince). However, this is not the same as determining the tool track based on a predetermined depth profile, as claimed, that is associated with a define contour. Whereas the claimed invention enables the depth profile to be freely selected, the cutting depth resulting from the method of Prince is a calculated variable determined by the shape of the cutting tool, limiting the resulting plate to whatever single depth that happens to result from the input cutting tool shape and contour. Both the claimed method and that of Prince will achieve a precise contour, but only the claimed invention can easily achieve a desired depth profile, and therefore a predetermined grey level or color during intaglio printing.

By varying the track based on the desired contour and the desired depth profile, the claimed invention permits maximum design flexibility. The operator chooses a desired contour and a desired penetration depth, and can freely vary either or both for any particular cutting tool. In the method of Prince, once the cutting tool and contour is chosen, the depth

is determined solely by calculation, and there is no association between a desired depth profile and contour.

The Lang patent, on the other hand, teaches a graphical design program for engravers and milling machines, and is not at all concerned with manufacture of intaglio printing plates. Instead, the method of Lang produces dies, and the Lang patent is concerned with a particular step "Schraffieren, Abräumen" (hatching, removal) that is not at all relevant to either the numerical control method of Prince or the calculation of a tool track in connection with the engraving of an intaglio printing plate, as claimed. While it might be true, as alleged by the Examiner, that there is nothing to prevent the depressions of Lang from being filled with printing ink, the result would not be intaglio printing, **in which the profile of the depression determines not only the contour of a printed character, but also the grey level or color**. One of ordinary skill in the art would therefore not have considered a method with calculated or fixed depth to be useful in intaglio printing.

As a result, it is respectfully submitted that the above listed claims are neither anticipated nor obvious in view of either the Prince patent or the Lang publication, whether considered individually or in any reasonable combination, and withdrawal of the various rejections of these claims under 35 USC §§102(b) and 103(a) is respectfully requested.

3. Rejection of Claims 1, 2, 5-11, 14, 16-18, 20, 36, 37, and 45 Under 35 U.S.C. §103(a) in view of in view of the Technical Manual from Lang GmbH (the Lang article) in view of U.S. Patent No. 4,949,270 (the Shima Patent)

This rejection is respectfully traversed on the grounds that the Shima patent fails to disclose or suggest a method of producing intaglio printing plates, as claimed, much less one that includes the step of producing at least one depression in the form of at least one line, the line defining a limited partial area of the surface, and an edge of the partial area defining a desired contour, and calculating a tool track based on the desired contour and *associated depth profile*. Since the Lang publication also fails to disclose or suggest the claimed steps, the

Lang publication could not have suggested modification of the Shima method to obtain the claimed invention.

In the method disclosed in the Shima patent, even though a predetermined depth is required for the milling tool, it is not necessary to consider a "depth profile" when calculating the track data, and therefore no possible suggestion of the now positively-recited step of "associating a depth profile within the desired contour." Instead, the calculation of a tool track according to the method of Shima is based solely on calculation of two-dimensional machine track start and end points input by a user, and interpolation of connecting lines of curves. Thus, it cannot be said that the calculation of the tool track is Shima is carried out by predetermining a desired contour defined by a two-dimensional line original and a desired penetration depth profile in the area to be engraved. Instead, the profile outline (POL) is used only as an aid for the user in positioning the cursor and in inputting the coordinates such that the user can manually take care that no section within the profile outline remains un-milled.

As pointed out in a previous response, the method of Shima involves displaying the profile outline or contour on a display screen of a computer (col. 1, lines 62-65; col. 2, lines 45-46), successively positioning a cursor so as to enable its coordinates to be input at selected points on the display screen, and then calculating the tool path using the manually predetermined coordinates in order to hollow out the interior of the profile or contour displayed on the screen. There is no association of the contour and depth profile, as claimed, and no need for such an association in order to produce the simple milled structures contemplated by the Shiwa patent. Like the Lang patent, which discloses a milling process for producing engraved objects, but not the production of intaglio plates, the Shima patent actually concerns so-called "pocket machining" for hollowing out the interior of the profile of a workpiece. This has nothing to do with engraving of printing or embossing plates, much less with micro-engraving to produce high-quality printed products, and those skilled in the art of intaglio printing would not have found any relevant teachings in the disclosure of Shima.

Because the Shima patent, whether considered individually or in any reasonable combination with the Lang publication, fails to teach or suggest the claimed steps for producing an intaglio printing plate, it is respectfully submitted that the rejection of claims 1, 2, 5-11, 14, 16-18, 20, 36, 37, and 45 under 35 USC §103(a) is improper and should be withdrawn.

4. Rejection of Claims 15 Under 35 USC §103(a) in view of U.S. Patent No. 4,949,270 (Shima), or the Lang Publication in view of U.S. Patent No. 4,972,323 (Cauwet)

This rejection is respectfully traversed on the grounds that the Shima patent and the Lang publication fail to disclose a method of producing intaglio plates in which a tool track is calculated based on a desired contour *and* associated depth profile, as discussed above, and on the grounds that the Cauwet patent does not make up for the lack of teachings concerning tool track calculation because the Cauwet patent teaches establishing engraving depths *after* calculation of the tool path (and renewal of engraving depth control signals "with each path"), which is exactly contrary to the claimed invention. As pointed out in the previous response, this can be understood from the description of X,Y control pulses, which does not involve setting the desired depth, and generation of the Z motor control pulses, which is the "next functional stage" (col. 9, lines 33-37 of Cauwet after the X and Y pulses are calculated, and which does not change the X,Y (tool path or track) calculation.

As a result, it is respectfully submitted that the Shima and Cauwet patents, considered individually or in any reasonable combination with the Lang publication, could not reasonably have suggested the claimed method or the plates produced thereby, and withdrawal of the rejection of claim 15 under 35 USC §103(a) is respectfully requested.

5. Rejection of Claims 1, 2, 5-14, 16-18, 20, 21, 36, 37, 40, 44, and 45 Under 35 USC §103(a) in view of U.S. Patent No. 2,210,923 (Jacquerod) or the Lang Publication, in view of U.S. Patent No. 4,907,164 (Guyder)

This rejection is respectfully traversed on the grounds that the Guyder patent, like the Lang publication, fails to disclose or suggest a method of producing intaglio plates in which

removal of a predetermined area of the intaglio plate is carried out to a desired depth and the track of the tool is calculated only on the basis of predetermined outer contour of an area defined by a **two-dimensional line** original and a predetermined depth profile, as claimed.

The Guyder patent at least involves a context in which the depth profile must be predetermined, but the method disclosed in the Guyder patent involves predetermining the depth profile by a **three-dimensional solid model**. There is no possible need, in the method of Guyder, to include the additional step of "associating a depth profile within the desired contour" since the contour and depth profile are already linked by the three-dimensional solid model.

The claimed invention may be thought of as a method involving graphic interpretation of a **two-dimensional** line original as areas. In contrast, the method described by Guyder starts out from a three-dimensional model of a cavity to be milled, and arranges tool tracks at different elevations when successively cutting the model in flat cross sections, as explained in col. 4, lines 42-45. Basically, the Guyder patent involves automatic milling to successively larger penetration depths in order to provide a hollowed out area of the work piece, rather calculation of a tool track to achieve a desired penetration depth for a particular contour. The reason that Guyder can take this approach is that it concerns the formation of cavities in die tools and nozzles, and not the fine engraving control required to produce intaglio printing plates.

As a result, the ordinary artisan would not have found any use for the method disclosed by Guyder in the milling machine of Lang, which also involves the formation of cavities in a workpiece, and the combination would not have resulted in the claimed invention. Therefore, withdrawal of the rejection of claims 1, 2, 5-14, 16-18, 20, 21, 36, 37, 40, and 44-45 under 35 U.S.C. §103(a) is respectfully requested.

6. Rejection of Claim 15 Under 35 U.S.C. §103(a) in view of U.S. Patent Nos. 2,210,923 (Jacquerod), 4,907,164 (Guyder), or the Lang Publication in view of U.S. Patent No. 4,972,323 (Cauwet)

This rejection is respectfully traversed on the grounds that the Cauwet patent, as explained above, fails to disclose or suggest the step of calculating a tool path by determining the outer contour and an associated desired depth profile of an area to be engraved, and because the Cauwet patent therefore could not have suggested modification of the methods described in the Guyder patent or the Lang publication, whether considered individually or in any reasonable combination.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

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